

# **Contaminant Profiles in Wastewater Measured in Support of the New Jersey Toxics Reduction Program for NY-NJ Harbor**

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## **Biographical Sketch of Authors**

Bo Liu is employed as a research scientist in Battelle's Coastal Resource and Environmental Management division, and is involved in project management, method development and instrumental analysis in a variety of environmental contaminant investigation. Greg Durell is a senior research scientist with more than 15 years' experience environmental chemistry, with an emphasis on designing and directing multidisciplinary environmental assessment and monitoring studies. Ms. Dahlen is a research scientist with 15 years of experience in the field of environmental chemistry, and specializes in trace organic analysis for monitoring and harbor dredging studies. Ms. Schrock is a principal research scientist with over 15 years of experience in analytical chemistry and manages Battelle's dioxin sample preparation and high resolution mass spectrometry analysis laboratory.

## **Abstract**

Twelve publicly owned treatment works (POTWs) discharge 610 million gallons per day of treated wastewater to the New York/New Jersey (NY/NJ) Harbor Estuary. This accounts for about 30% of the total wastewater volume discharged by treatment facilities from NY and NJ to the Hudson River Basin. A program is under way to assess the contaminant loading to the Estuary that can be attributed to POTW discharges, and to reduce the discharge of toxic contaminants. POTW effluent, combined sewer overflow (CSO), and storm water outfall (SWO) samples were analyzed for polychlorinated biphenyls (PCBs), dioxins/furans, pesticides, and polycyclic aromatic hydrocarbons (PAHs) using state-of-the-art isotope dilution gas chromatography/high-resolution and low-resolution mass spectrometry detection techniques. The seasonal contaminant concentration trends, including compositional and phase characteristics, will be described for 4 POTW sampling events conducted in 2000 and 2001. Whole water concentrations (composite suspended plus dissolved phase samples) of total PAH, total PCB, total DDT, and 2,3,7,8-TCDD were 201-190,000 ng/L, 14,600-202,000 pg/L, 428-11,600 pg/L and not detected-0.78 pg/L, respectively. The majority of the PAH was associated with the dissolved phase, while the PCB and dioxin/furans were mainly associated with particulates, and the pesticides phase distribution varied for the different pesticide compounds. Approximately half of the total PCB in the effluent from one POTW was a single congener—PCB11—that has been identified as a by-product of a specific industrial pigment manufacturing process. The POTW data will be used to complement other data collection efforts to improve the understanding of the relative importance of point and non-point sources of contaminants to the NY/NJ Harbor.